

February, 2011

Solid Copy de KC7Z

Newsletter of the North Kitsap Amateur Radio Club

PO BOX 2268 -- Silverdale, WA 98383-2268

Web page: <http://www.nkarc.org>

February, 2011

Prez Says:

We (Dave, N7ORM, and Warren, N7SI) made it back home last night, around 11 pm. We didn't do a lot of HF on the trip home (we did do a considerable amount of UHF), we were tired and, well, were just eager to get our happy butts in our own beds. We drove over 6200 Miles in our 14 day adventure. I know for a Long Haul truck driver that isn't much, but for this guy, it's a lot :).

A Little summary of adventure:

- It was COOOOOOOLD!!!
- It was SNOOOOOOWY!!!
- It was ICEY!!!
- It was WINDY!!!

With the combination above, vehicles don't like to stay on the road. Saw lots and lots and lots of trucks and cars, off the side, hijacked etc...and yes even ourselves at one point, it was a scary experience, lucky we had a nice very large median to spin out in :)

We made a lot of HF contacts on the way out, including Croatia, on the first try. Rest were all over the US and Canada. We did hear the Azores very well, but he had a huge pileup and was working split and we just couldn't get him before the conditions changed for the worse.

As for UHF, it was a little disappointing on how few were out there on 52, but we did make a few contacts there and also found local repeaters as we drove thru to find others. There are a lot of nice guys out there ready to feed you any info you need on your journey. The repeater handbook was very handy for this.

Anyway, the real reason for the trip was my son's wedding. It was fantastic. Held in a very nice chapel in the middle of nowhere with farms all around. Wonderful setting. Finally got to meet my new daughter and she is great, he did himself good, very

proud. And on that note...yes...I am going to be a grandpa as well, they announced that she is pregnant, about a month along now. Now I am starting to feel old.

73,
Dave/N7ORM

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Scheduled Upcoming Events

Club General Meeting

Date: February 19, 2011

Location: Silverdale CK Fire Station # 51

Time: 10:00 AM

Project Night

Location: Fire Station #51 – Silverdale

Date: Friday February 25,2011

Time: 6:30 PM until complete or 9:00 PM

NKARC Breakfast

Date: February 26, 2011

Located: All Star Lanes, Silverdale

Time: 9:00am

Board of Directors Meeting

Date: March 4, 2011

Location: Silverdale CK Fire Station # 51

Time: 6:30 PM

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January VE Exam Session

Our January VE exam session was well attended. There were 7 candidates and 8 VEs. Everyone either gained or upgraded a license. There were 3 new Technician, 3 new General, and 1 new Extra license earned. Congratulations to Dennis Sawyer KE7DZ on his new Extra license.

Our next VE exam session will be at 9:00 a.m. Saturday, March 26, 2011, at the Poulsbo Library

Horace, K7ORY

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February, 2011

From the Editor's Machine:

This month "The Wayback Machine" looks at the evolution of broadcasting, and the amateur's role in it. The idea of commercial radio broadcasting was not considered a profitable enterprise until radio amateur radio operators started broadcasting periods of music, news reports and other events and people swarmed to but a radio receiver first manufactured by Westinghouse Corporation. The 1920s were an interesting time for radio communications.

The articles on meters and measurements authored by Kris, KF7GWG are resumed with a very good explanation of A.C.. meters and how they work

The Solid Copy is open to all who have an idea , a project to describe or suggestions on programs for the club to become involved We don't get the support of the public if they don't know we are here.

Solid Copy is being forwarded in pdf format to keep the file size to a level that will be acceptable to most ISP providers. Seems that some of the Providers limit file size to 10 megabytes.

Comments and suggestions are gladly accepted – even criticisms. Send them to me at any time.

73,
Bob, N7KTP

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RACES/ACS Net Sessions:

The Kitsap RACES/ACS net is held on Sunday nights at 7:30 PM on the 145.43 repeater (-600 offset, 179.9 PL tone). Check in and be informed on emergency communications in Kitsap County.

The packet radio net in on 145.63 Mhz at 7:00 PM. Connect to K7EK-8. . If you cannot connect to K7EK-8 directly, connect to the ELYSSA node on the same frequency and then connect to K7EK-5.

Other nets include 10-meter HF Net on 28.330 Mhz USB starting at 7:00 PM

6 meter FM net on 52.35 Mhz starting at 7:00 PM

Field Day-2011:

It's not too late to be planning the NKARC 2011 Field Day operation. What is Field Day? Field Day is an annual event organized many years ago by the ARRL to encourage amateur radio operators to test their ability to set up and operate in "emergency communications situation" to provide support in case of a disaster. Early Filed days were held in farm fields, parks, and most any open area where antennas could be strung up and communications tents set up to hold the equipment and operators. My first Field Day operation was in Pilsen Park on the West side of Chicago in 1937. In those days, portable equipment was heavy battery operated receivers and transmitters with low power out put. There was one high powered (50) watt CW transmitter powered by a generator owned by one of the more prosperous club members. Antennas were verticals, wire dipoles and long wires strung between the trees. I was five years old at the time and one of the younger members was assigned the job of keeping track of me so that I could not "tweak" the gear when somebody wasn't watching. One other memory was that I ate enough hot dogs to be sick for a few days. The club named "Hamfesters" was a very sociable club and the members were there to help one another. Each member was an "Elmer" to help others when it came to something involving amateur radio.

Coming to the present, a committee headed by Paul Voorhees, W7PV, is working to have an organized Field Day for club members and others who would like to be involved. Some of the club members have signed up to work on the planning but we need commitment for set up, operations and tear down along with most importantly—food support. Present plans are to hold the Field Day at the Green Mountain Horse Camp, same site as last year, on the weekend of 25-26 June with setup possibly the day before. Paul has a list of items and positions that he needs filled in order to assure a successful field day. If you have a few hours to spare, contact him and let him know. A little hint—It's a great opportunity for a family picnic considering its location. From my experience, the equipment now operated at Filed Days are far different from those I talked about earlier, but the spirit and intent is still the same.

Paul can be contacted at ropavo@gmail.com.

Bob, N7KTP

NKARC Repeater Status:

After the Field Day Committee met on the 440 machine this week and had a minor problem with the time-out feature, I got the manual from Warren, made one minor tweak, and thought I'd pass along the time-out/reset details.

The machine is and has been set to time out if you talk more than 5 minutes. However, after transmitting, you have to let it reset for 1 second (it was 2 seconds; I just changed it to one), or if the next station jumps in right away without the reset, the 5 minute timer does not reset. What happened with our meeting a few times, was that after the first station talked for say 3 minutes, and the next station jumped in right away, the timeout would kick in after only an additional 2 minutes, dropping out altogether for 5 seconds before resuming.

Repeater users often reset the timer during longer transmissions (although 5 minutes should usually be plenty of time), by saying 'reset' and stopping transmitting briefly. This lets others know that the station will continue after the reset.

Paul , W7PV

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2011 Dues Are Due

Time flies and it's time to remind club members to renew club memberships Put a check for your dues in the mail and address it to the club (Box 2268, Silverdale, WA 98383-2268) or better yet, bring it to the club meeting at Firehouse 51 in Silverdale. Dues are \$15/year (\$12 for seniors, \$6 for students and \$10 for additional family members). You can download an application for your renewal by going to the webpage at <http://nkarc.org> and clicking on "Join NKARC" followed by "Online".

Your pre-written check will facilitate matters at the meeting and help avoid interrupting the activities. Treasurer Warren will have the club roster handy and we can check you off once paid.

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Cleaning in the Shack:

While you are getting ready to set up for the annual Spring cleanup, you probably found some old gear you haven't used in a long time originally put away as a backup. Now, you realize, that you don't need that backup and it's time to "get rid of it." Set the items aside and let your editor know that they are up for sale. Or trade. An ad can be placed in Solid Copy for the right price – free.

Another option is to discuss the possibility of setting aside a meeting to let members sell or trade for available items. The meeting could be scheduled in late spring or early summer. It might even be a tailgate party/ meeting. Remember—one man's surplus ("garbage") is another man's treasure. That old TV antenna that you have been meaning to take to the dump can be easily converted to a six meter beam by somebody who needs one and is a little short of cash. The spool of wire will make a nice dipole antenna for the new kid on the block.

Buy---Trade---Sell---Need

**One man's discard is another man's treasure,
Let the club know of it by putting it here.**

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February, 2011

The Wayback Machine –Chapter 5 A History of Amateur Radio

by Bill Continelli, W2XOY

These articles first appeared in the Schenectady Museum Amateur Radio Association's Newsletter, "RF Musings". They are reprinted here with the author's generous permission.

On November 2, 1920, Warren G. Harding was elected President of the United States. Millions read the election results in the newspapers the next day. In the Pittsburgh area, however, hundreds heard the election returns the moment they were wired in, thanks to Dr. Frank Conrad, a Westinghouse employee, who broadcast the results over 8XK, his amateur station. This station would evolve into KDKA, and the night of November 2, 1920 has been called the start of the multi-billion dollar broadcast industry. But was it? This month "The Wayback Machine" looks at the evolution of broadcasting, and the amateur's role in it.

The idea of broadcasting was first considered by Lee deForest in May, 1902, when he wrote that "Ultimately, wireless telephony will be possible". He urged the financial backers of the deForest Wireless Telegraph Company to develop and patent the concept. The stockholders, however, were more interested in immediate profits (through massive stock sales) rather than genuine development, and refused to finance the necessary research. Undaunted, deForest in 1907 formed the deForest Radio Telephone Company. In a statement that for 1907 must have appeared radical and even bizarre, but was amazingly prophetic, he wrote, "I look forward to the day when opera may be brought into every home. Some day the news and even advertising will be sent out over the wireless telephone".

Despite deForest's intense interest in this area, he was not the first to broadcast the human voice and music over the airwaves. That honor belongs to Reginald Aubrey Fessenden, a Canadian Professor. He was the first to recognize the inherent flaw in the concept of spark transmissions, and set out to find an alternative. His quest led him to Schenectady, NY, and the services of General Electric's most brilliant scientist, Charles Steinmetz. Fessenden explained his idea: an alternator capable of generating waves of 100,000 cycles per second (3000 meters). Steinmetz and his assistant, Ernst Alexanderson, worked for almost two years, and finally produced an alternator that met Fessenden's requirements. The Alexanderson Alternator, as it was now known, was delivered to Fessenden's station in the Fall of 1906. On the evening of December 24, 1906, ship and amateur operators heard something in their headphones they had never heard before: someone speaking! A woman singing! Someone reading a poem! Fessenden himself played the violin. (The Alexanderson Alternator would play a prominent role in early high power stations and will be fully covered in a column exploring Schenectady's contribution to the development of radio and television).

Not to be outdone, deForest continued his radio telephone experiments in the period 1907-1910, broadcasting from the Eiffel Tower and live from the stage of the Metropolitan Opera, where Enrico Caruso was singing. However, all of these transmissions had a major problem: without a pure, stable, direct current CW carrier to modulate, all the signals had a background whine and distortion. Real development in the area of modulated carriers would have to wait until Armstrong discovered the oscillating properties of a regenerative circuit.

By 1916, both Armstrong's circuit and the Audion were widely circulating in the radio world, and broadcasting surfaced again. Lee deForest resumed his transmissions, with programs of "good music, culture, and lectures". deForest can be credited with two "firsts" in 1916; the first advertisements (for his Audion and other products), and the broadcast of the Presidential election between Woodrow Wilson and Charles Evans Hughes. (Unfortunately, deForest signed off before the California results were in, so he declared Hughes the winner over Wilson).

Also, in 1916, amateur station 2ZK broadcast one hour of music each night. David Sarnoff, who had manned his station during the Titanic disaster, also got into the act. He wrote a memo to his employers at American Marconi suggesting a "Radio Music Box", which would become a "household utility". He went on to describe his vision of radio broadcasting, and then turned to finances. He predicted an income of \$75,000,000 or more each year from the sale of receivers. Marconi, still focusing on ship to shore telegraphy, took no action on the memo.

After amateurs had returned to the air in November 1919, hundreds of them began to explore the area of broadcasting. In May, 1920, amateur station 8XK joined many other hams in the transmission of music. Incidentally, it WAS LEGAL for amateurs to broadcast music, news, sports, lectures, advertisements, or indeed just about anything else they wanted. The Radio

February, 2011

Act of 1912, still in effect, did not mention "amateurs", rather, one paragraph made a general reference to individual private or commercial stations. The only real restriction was the 1 kw power limit and the 200 meter wavelength. After that, the government didn't care. Thus, those amateurs who had built equipment to modulate their CW transmitters eventually played a phonograph record or two, sang (or tried to sing), or broadcast some form of entertainment.

With all of the above documented evidence, why is November 2, 1920 considered the start of broadcasting? The answer lies not at the transmitter, but at the receiver. Prior to that night, all broadcasts had, in effect, been from one amateur to another, or to a commercial station. The November broadcast, though, was designed and promoted by Westinghouse as a transmission to the general public. Starting in September, stores were selling basic receivers for \$10.00 to receive 8XK. Westinghouse, in effect, had seized deForest's and Sarnoff's idea, and was marketing it to the general public. Thus, it was the makeup of the listening audience that defined the start of broadcasting.

When the word of this successful transmission got out, more amateurs got into the act and set up their own little broadcast stations. By the end of 1921, it was estimated that about 1200 amateurs had made at least one broadcast. Some had a regular schedule of programs and would evolve into commercial stations, others did it just out of curiosity. But there were listeners. Over 400,000 people heard the Dempsey-Carpentier fight on July 2, 1921. Radio sales were approaching 100,000 per year, not counting crystal sets which were selling at the rate of 20,000 per month. However, with this explosive growth came two problems for the amateur.

The first was an identity crisis; what should the role of the amateur be in broadcasting? Some thought we should stay out of it and just stick to traffic handling on CW. Others envisioned the amateur as a jack of all trades, expert CW operator and relay station, as well as community broadcaster. In fact, a new name evolved to describe this amateur/broadcast hybrid, "Citizen" radio or wireless. Even QST was confused; for a period of time in 1921, the word "Citizen" replaced "Amateur" on the front cover.

The other problem was frequencies. Everyone - amateur, broadcaster and hybrid - was on 200 meters. Tuning across the dial in 1921, one would mostly hear CW, a few spark holdouts and the new broadcasters. While the amateurs were used to the interference, the general listening public was not. They had purchased their radios to hear music, not CW. Complaints started to pour into the Secretary of Commerce. Legally he was powerless, as the Radio Act of 1912 offered no solutions. A conference was called for all interested parties, held in Washington in February 1922 to try to resolve the impending crisis.

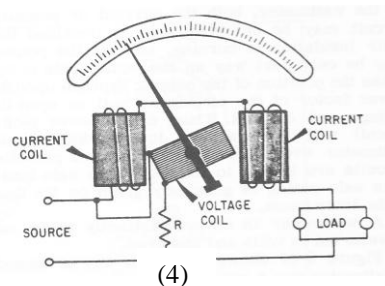
Even though he was exceeding his authority under the Radio Act, Secretary Hoover was able to get the following proposals accepted at the conference: 1) Henceforth, special broadcast licenses would be issued. Two frequencies would be available for broadcasters immediately, 360 meters (833 kHz) for regular transmissions, and 485 meters (619 kHz) for crop reports and weather forecasts. 2) After the marine interests had abandoned the 220 to 545 meter range (1363 to 550 kHz), it would be turned over to broadcasting. 3) Broadcasting was forbidden by amateurs, who were defined for the first time by name as stations operating "without pay or commercial gain, merely for personal interest". 4) "Quiet Hours" were imposed on all amateur stations effective from 8:00 to 10:30 PM daily, and on Sunday morning.

The fact that the number of broadcast stations dropped from 1200 to 30 immediately after these regulations went into effect shows just how many amateurs were, in fact, pioneer broadcasters. This agreement, however, was a house of cards. Secretary Hoover has stretched his authority under the Radio Act of 1912 well past the breaking point. In 1926, the cards came tumbling down, and the "Summer of Anarchy" was ushered in. How would amateurs fare with no enforceable regulations in place? Join us next time as "The Wayback Machine" explores the events leading up to the creation of the Federal Radio Commission.

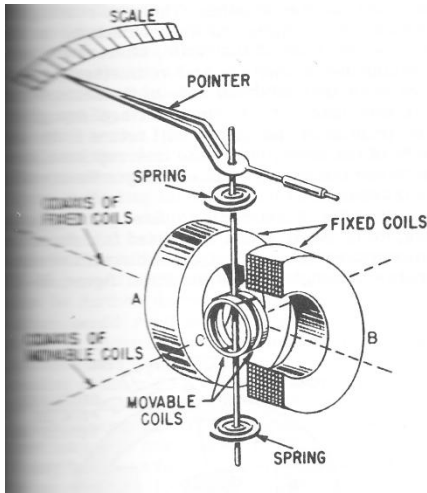
Meters and Measurements Kristofer Stafford Kf7GWG

ANOTHER METER

Different from the galvanometer-type meter that has been previously discussed, the electrodynamicometer-type meter uses no permanent magnet. Instead the

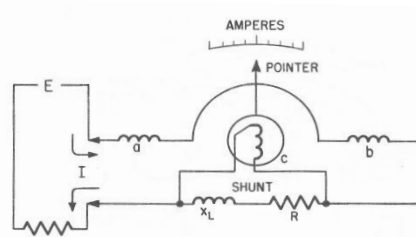


electrodynamometer uses a set of fixed coils to produce the magnetic field.(1)

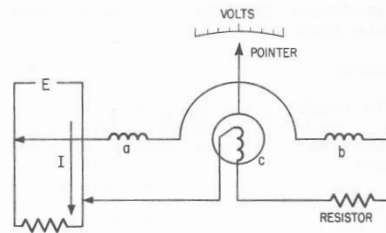


Inside construction of an electrodynamicometer

(2)



Electrodynamometer as ammeter



Electrodynamometer as voltmeter

(3)

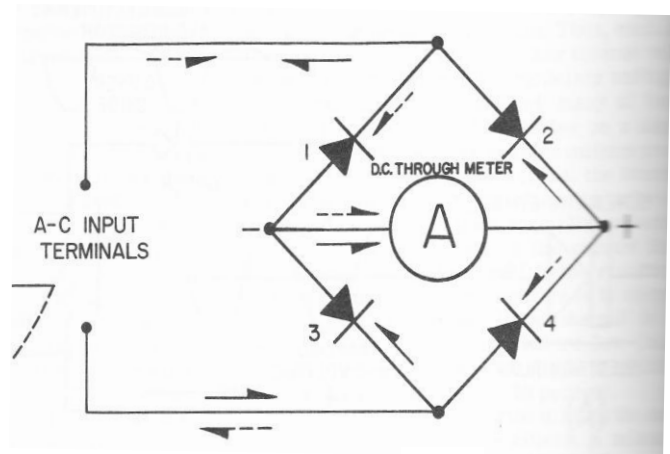
The two fixed coils are placed in series with the component to be measured. The springs which hold the mechanical zero of the movement act as contacts by which the movable coils are connected in series. For measuring voltage a current limiting resistor is placed in series to limit armature (movement) current. For measuring current an inductive shunt is placed in parallel with the movement. This shunt allows for current flowing through the movement to be proportional through all frequencies and still be reasonably correct. (5)

Accuracy of the electrodynamicometer is high, but it has a low sensitivity when compared to a D'Arsonval-type meter and as a result are usually found only in laboratory situations. (6)

There are other types of meters that exist. The ones that I have mentioned here are of what I would consider the common variety. On to AC measuring devices now.....

BASIC AC MEASURING DEVICES

Basic AC measuring devices are of the same construction that DC measuring devices are, with one exception. A rectifier may be added to the input of the circuit to change the input signal from an AC signal to a DC signal. Since AC signals have varying instantaneous changes, the meters are usually calibrated to indicate only the root mean square (rms) value in order to standardize and simplify readings



(7)

The Wattmeter

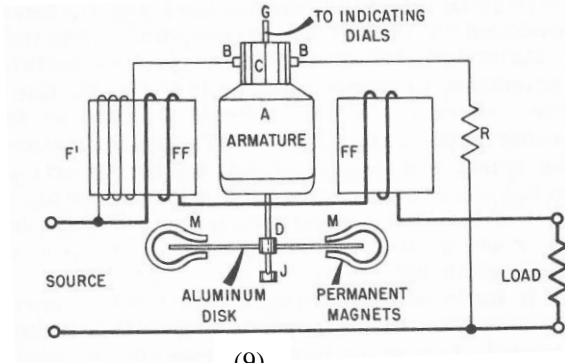
Looking back on (4) above, you will see the basic layout of a wattmeter. Two fixed coils are in series with the load, and the movement coil is in parallel with the load. In series with the movement coil is a

February, 2011

resistor. This resistor has a very high rating. The reason for this is to make the meter movement as purely resistive as possible so that the current applied is as close as possible to being proportional and in phase with the line voltage. (8)

The Watt-Hour Meter

Energy is power used over time, and time is money (or at least the power company thinks so). Here is how that little meter outside of your house works.



(9)

Household current passes through the large windings marked as FF. The magnetic fields that are created are in direct proportion to the current flowing into your house (wait a second; didn't I just say that?). In parallel with the household load is a small armature attached by coil F' to the brushes B. Now thinking back to our Right Hand Rule for Motors, we can see that as long as current is flowing into the house, then the armature will turn. What have we learned from this? The torque produced in the armature is

proportional to the amount of power used at that time in your house. Since power in your house is almost constantly changing, the movement of the armature must be slowed. The amount of force by which the armature is slowed is proportional to the speed of the rotor. This is accomplished by placing an aluminum disk at the far end of the armature and having it rotate between a set of permanent magnets. Of course, now we have a conductor inside of a magnetic field, so generator action occurs. This counter electromotive force builds up eddy currents in the disk and starts to oppose the force that caused it, thus adding resistance to the armature (or in other words, it applies negative torque). Attached to the near side of the armature is a gearing mechanism that moves the indicating needles to allow tracking of the amount of power used over time. (10) Ok, so if I have lost you, maybe this will help. The power of your house is measured by the large field coil. The amount of time this power is applied is measured by the number of rotations of the armature, and is recorded by the gears that move the dials on the faceplate.

That's enough for tonight.

(1) Basic Electricity, Reprint of the Bureau of Naval Personnel Training Manual, 2004 Edition, Fall River Press, Pg. 260

(2) Drawing from Basic Electricity, Reprint of the Bureau of Naval Personnel Training Manual, 2004 Edition, Fall River Press, Pg. 261, Fig. 15-10

(3) Drawing from Basic Electricity, Reprint of the Bureau of Naval Personnel Training Manual, 2004 Edition, Fall River Press, Pg. 261, Fig. 15-11 A&B

(4) Drawing from Basic Electronics, Reprint of the Bureau of Naval Personnel Training Manual, 2004 Edition, Fall River Press, Pg. 47, Fig. 3-18

(5) Basic Electricity, Reprint of the Bureau of Naval Personnel Training Manual, 2004 Edition, Fall River Press, Pg. 261

February, 2011

(6) Basic Electricity, Reprint of the Bureau of Naval Personnel Training Manual, 2004 Edition, Fall River Press, Pg. 261

(7) Drawing from Basic Electricity, Reprint of the Bureau of Naval Personnel Training Manual, 2004 Edition, Fall River Press, Pg. 272, Fig. 15-22

(8) Basic Electricity, Reprint of the Bureau of Naval Personnel Training Manual, 2004 Edition, Fall River Press, Pg. 272

(9) Drawing from Basic Electricity, Reprint of the Bureau of Naval Personnel Training Manual, 2004 Edition, Fall River Press, Pg. 274, Fig. 15-25

(10) Basic Electricity, Reprint of the Bureau of Naval Personnel Training Manual, 2004 Edition, Fall River Press, Pg. 273 & 274

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Kris, KF7GWG